Appendix G

Military Operations on Urbanized Terrain

This appendix discusses the difficulties and restrictions on ES and EA in MOUT environments. These problems are hard to overcome.

G-1. Buildings diffract radio signals, making DFs highly inaccurate, unless systems have LOS. This in turn makes the use of EA difficult without accurate antenna orientation towards the target. The diffraction also hampers the ES if signals are at the threshold levels for intercept but are not intercepted due to the diffraction.

G-2. Use of terrain to lay landlines not readily detectable by friendly forces, (for example, the use of sewer systems) prevents the use of ES or EA on those communications. Urban environments favor the use of couriers to maintain C^2 channels. A modern adversary in an urban environment can make use of secure Internet service to pass information (for example, passing calls for fire via the Internet).

G-3. SIGINT teams use EOB to identify threat communications systems and their critical nodes. Development of the EOB begins with MOUT IPB in which analysts template the EM spectrum and describe how the threat uses it. National level SIGINT teams and assets provide additional information which analysts use to refine the EOB and to support future developments in the EOB. Other elements, such as PSYOP teams, may contribute to the development of the EOB by providing information on communications architecture and critical nodes of public information systems.

G-4. The EWO uses EOB information developed by the SIGINT team to develop HPTs for specific COAs, and during the targeting process to determine targets for EA. The EWO also determines the support necessary to engage targets with assets from higher. During MOUT, IPB analysts can expect to find three critical communications systems common to most MOUT environments.

- Radio and Television. Radio and television stations provide the threat with mass communication, over a large portion of the battlefield. This communication will also give the threat a propaganda tool.
  - Advantage: Easily monitored with ES, one-way communication, and digitally not encrypted.
  - Elimination: The strong signal generated by radio and television stations are easily located with ES, After location, three ways remain to deal with radio and television stations: lethal fires, nonlethal fires (EA), or capture with friendly forces.

- Telephone and Cellular Phone. Telephone systems provide a landline capability that is impossible for division tactical SIGINT assets to

monitor or engage with EW. National assets are available, but the EWO or collection manager must request these assets in advance to monitor and engage this system. Cellular phones, while not depending upon landlines, depend upon relay station and satellite communications, some of these communications; can be monitored by divisional assets while others require national assets support.

- Advantage: Infrastructure is not designed to function after being engaged with lethal fires. Cellular phones are dependent upon critical uplinks and are limited by terrain and weather conditions.
- Elimination: EOB provides the critical nodes of telephone system for targeting. These nodes can be engaged with lethal fire or nonlethal national assets. The capture of this system provides a large database and critical information for targeting (for example, location and function of threat units using the telephone system).

- Internet. The Internet provides the threat a system for secure communications. This landline communication system is difficult to monitor or engage. Coordination with the IO cell will provide support and experience on how to best engage this target.
  - Advantage: Infrastructure provides unlimited access for friendly forces into threat communications; it has no redundancies to prevent the shutting down of this communication system after being engaged with lethal fire.
  - Elimination: The IO cell provides the critical nodes of this communication system. National assets either with EA (DE) or with information warfare assets can engage these nodes. IO support for engagement of the Internet is critical due to the expertise and scope of the IO personnel.

G-5. Aggressive and focused use of EA is critical in a MOUT environment. The threat C^2 nets are critical targets. These nets provide the threat the ability to shape the battlespace to their advantage. In this constrained environment, where the environment favors the defender, the added advantage of a strong C^2 net causes numerous difficulties culminating in unacceptably high losses.

G-6. Hospitals, ambulances, fire fighters, and other agencies rely on the use of telephones and Internet services to provide humanitarian assistance to numerous noncombatants: to disrupt these and cause a high loss of life to noncombatants must be weighed against the mission priority. These resources must be left intact, if possible, to provide services to maintain the populace. Friendly forces must curtail their EA of communication resources due to the ROE and humanitarian constraints. Civilian Affairs must be consulted before any barrage EA engagements begin, if at all possible, and must examine the legal and ethical ramifications of disrupting the noncombatant use of EM.